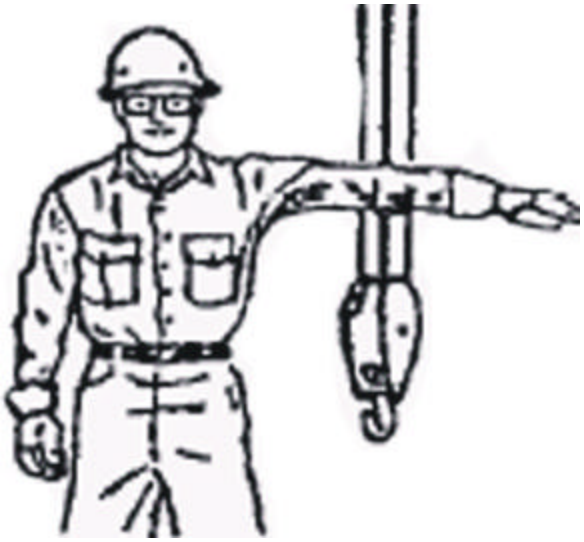
Safety Manual

For

Overhead Crane Operators



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BSR/CET 0151 (10-10-02)

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Safety Manual for Overhead Crane Operators

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An overhead crane operator's job is very important. It is a position of responsibility that you must be authorized to hold. There are rules and regulations you must obey and responsibilities you must accept.

For specific rules and regulations and your responsibilities when operating an overhead crane in Michigan, see MIOSHA General Industry Safety Standard Part 18 – Overhead and Gantry Cranes.

This manual may be used as a tool in the overall training and authorization of a prospective overhead crane operator.

Employers and employees need to be aware that all cranes are different and may have specific operating, safety, inspection and maintenance requirements. It is essential that you have the manufacturers operating manuals and are familiar with your particular crane.

Qualifications

The minimum qualifications for an employee selected to operate a crane are as follows:

- Have corrected vision that meets the same requirements as vision for a valid Michigan driver's license.
- Have effective use of all 4 limbs.
- Be of sufficient height to operate the controls and to have an unobstructed view over the controls into the work area.
- Have coordination between eyes, hands, and feet.
- Be free of known convulsive disorders and episodes of unconsciousness.

The employee must also have the ability to understand signs, labels, and instructions. The employee must be examined for these qualifications at least once every 3 years.

Permits

You must be trained and tested before you can operate an overhead crane. Upon passing this test and meeting other operator requirements (including demonstrating proficiency in running the crane) a permit will be issued to you. It's to be carried by you or be available upon request.

Sample Permit

CRANE OPERATOR PERMIT
(Firm Name)

Operator's Name
Operator's Number
Is Authorized To Operate*: (Insert Type of Crane(s) Authorized)*
Restrictions: *(Explanation of Restrictions)*

Date Issued: (Month-Day-Year)
Date Expiring (Month-Day-Year)

By Issuing Authority: _____
Title

Training

Training of all operators will include the following:

- Capacities of equipment and attachments.
- Purpose, use and limitation of controls.
- How to make daily checks.
- The energizing sequences, including pneumatic, hydraulic, and electrical sequences.
- Start-up and shutdown procedures.
- Emergency shutdown procedures.
- General operating procedures.
- All basic signaling procedures, including hand, radio, or telephone signals, where required.
- Knowledge of MIOSHA Part 18, Overhead and Gantry Cranes, and other applicable MIOSHA standards.
- Practice in operating the assigned equipment through the mechanical functions necessary to perform the required task.
- Maximum rated capacity of the crane.

Training of all riggers will include the following:

- The requirements of MIOSHA Part 18, Overhead and Gantry Cranes.
- Knowledge of MIOSHA Part 49, Slings.
- Knowledge of MIOSHA Part 33, Personal Protective Equipment.
- Maximum capacity of the crane.
- Rigging procedures.
- Company rules and regulations.

Personal Protective Equipment

When your employer conducts a personal protective equipment hazard assessment (as required in Part 33, Personal Protective Equipment), they should include overhead cranes in their review.

An operator and any employee directing a lift must use the PPE required in the area. If the top of the load is lifted to a height greater than 5 feet, then the load is considered an overhead hazard and head protection needs to be worn.

When an employee is performing maintenance on an overhead or gantry crane and a standard barrier or platform is not provided the employee must wear an approved safety harness and lanyard, or a fall arrest device as prescribed in construction safety standard, Part 45, Fall Protection.

General Conduct of Operators

At the beginning of each shift during which a crane is used, a visual inspection must be made in accordance with Table 2 below. A visual inspection is limited to that which can be made from a catwalk or other safe observation point. Any defects must be reported to a supervisor.

TABLE 2

Shift/Operator Inspection Checks

Inspection Item	Description of Inspection Check Points
Tagged Crane or Hoist	Check that crane or hoist is not tagged with an out-of-order sign.
Control Devices	Test run that all motions agree with control device markings.
Brakes	Check that all motions do not have excessive drift and that stopping distances are normal
Hook	Check for damage, cracks, nicks, gouges, deformations of the throat opening, wear on saddle or load bearing point, and twist. Refer to the manual furnished by the original manufacturer of the crane.
Hook Latch	If a hook latch is required, check for proper operation.
Wire Rope	Check for broken wires, broken strands, kinks, and any deformation or damage to the rope structure.
Reeving	Check that the wire rope is properly reeved and that rope parts are not twisted about each other.
Limit Switches	Check that the upper limit device stops lifting motion of the hoist load block before striking any part of the hoist or crane.
Oil Leakage	Check for any sign of oil leakage on the crane and on the floor area beneath the crane.
Unusual Sounds	Check for any unusual sounds from the crane or hoist mechanism while operating the crane or hoist
Warning and Safety Labels	Check that warning and other safety labels are not missing and that they are legible.
Housekeeping and Lighting	Check area for accumulation of material, trip or slip hazards, and poor lighting

A hoisting limit switch on a crane or hoisting device must not be used as an operating control unless the crane is also equipped with a backup limit switch.

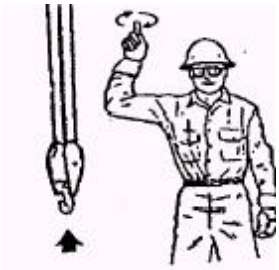
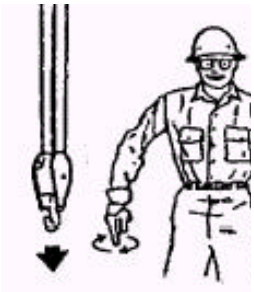
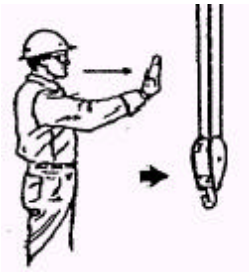
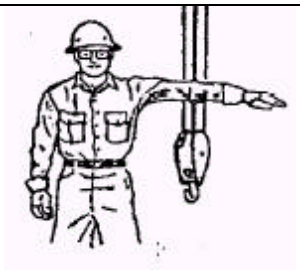
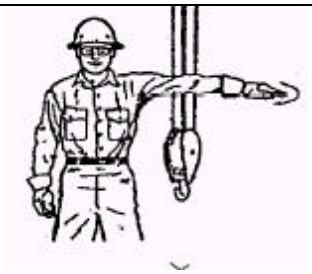
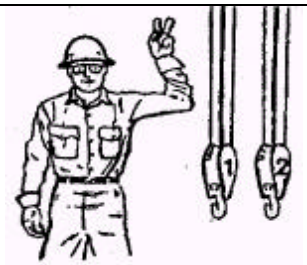
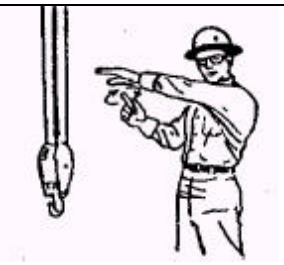
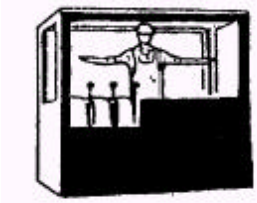
A load must not be lowered below a point where less than 2 full wraps of wire rope remain on the hoisting drum.
If there is doubt concerning the safety of a crane or hoisting means, the operator must immediately stop the crane and report the condition creating the doubt to the supervisor.

In the event of power failure, the operator must place all controllers in the "off" position. When an operator leaves a crane unattended s/he must land any attached load, place the controllers in the "off" position, and open the main switch. Before closing a main switch the operator must make sure all controllers are in the "off" position. The main switch does not need to be opened on a pendant-controlled crane if the crane is left unattended for short periods.

An operator must only respond to signals from the employee directing the lift. Except for an emergency stop signal, which must be obeyed when given from any employee. The signals given to an operator must conform to table 1 below.

Table 1

Standard Hand Signals For Controlling Overhead And Gantry Cranes

 HOIST. With forearm vertical, forefinger pointing up, move hand in small horizontal circle	 LOWER. With arm extended downward, forefinger pointing down, move hand in small horizontal circle.	 BRIDGE TRAVEL. Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.
 TROLLEY TRAVEL. Palm up, fingers closed, thumb pointing in direction of motion, jerk hand horizontally.	 STOP. Arm extended, palm down, hold position rigidly.	 EMERGENCY STOP. Arm extended, palm down, move hand rapidly right and left.
 MULTIPLE TROLLEYS. Hold up one finger for block marked “1” and two fingers for block marked “2”. Regular signals follow.	 MOVE SLOWLY. Use one hand to give any motion signal and place other hand motionless in front of hand giving the motion signal. (Hoist Slowly shown as an example.)	 MAGNET IS DISCONNECTED. Crane operator spreads both hands apart – palms up.

An operator must not carry a load over another person.

A crane must not be used to make a side pull (except where it has been specifically authorized by a qualified person after making specific determinations).

Compressed gases can only be lifted by a cradle or enclosed platform.

An employee cannot ride a hoisting device, such as a magnet, hook, ball, or load. The only exception is a work platform that meets all the requirements in the construction safety standard Part 10, Lifting & Digging Equipment.

When attaching or moving a load, the operator, rigger, or hooker must make sure of all of the following:

- The hoisting rope or chain is free of kinks or twist and not wrapped around the load.
- The load is attached to the load block hook by means of a sling or other approved device.
- The sling and load will clear all obstacles or obstructions.
- The load is balanced and secured before lifting the load more than a few inches.
- Multiple lines are not twisted around each other.
- The hook is brought over the load in a manner to prevent swinging.
- There is no sudden acceleration or deceleration of the moving load.

Inspection

The inspection procedure for cranes in regular service is divided into 2 general classifications:

- Frequent inspections are done monthly to quarterly or at intervals of 100 hours of use, whichever comes first.
- Periodic inspections are done annually or at intervals of 500 hours of use, whichever comes first.

The inspections cover topics outlined in the standard or manufacturers guidelines.

Maintenance

The employer must maintain a crane and its accessories in a condition that will not endanger an operator or other employee.

A preventative maintenance program will be established and the program will be based on the manufacturer's recommendations and for the application as reviewed by a qualified person.

Before adjustments or repairs are made on a crane, all of the following precautions must be taken:

- The crane will be moved to a location where it will cause the least interference with other moving equipment on the track or rails and operations in the area.
- Controllers will be placed in the "off" position.

- The main switch will be placed in the “off” position or “open” position and **LOCKED OUT**, except where power is necessary to adjust or service the crane.
- A warning sign or “out of order” sign will be placed at the operator control station.
- Illumination of 15 footcandles intensity will be provided while maintenance is performed on the crane.

If any other crane uses the same runway, then a protective device must be used to prevent interference with the idle crane undergoing repairs. If a protective device is impracticable, then a signal person must be placed at a visual vantage point to warn the operator of the active crane when it reaches the limit of safe distance from the idle crane.

A crane that has been adjusted or repaired must not be returned to normal operation until all guards have been replaced, locks removed by those who installed them, or their supervisor, safety devices reactivated, and the maintenance equipment removed.